

Motorola

HOME RADIO

S E R V I C E M A N U A L

MODELS

55C1	MAHOGANY
55C2	WHITE
55C3	MINT GREEN
55C4	CLOVER PINK

CHASSIS

HS-456

GENERAL INFORMATION

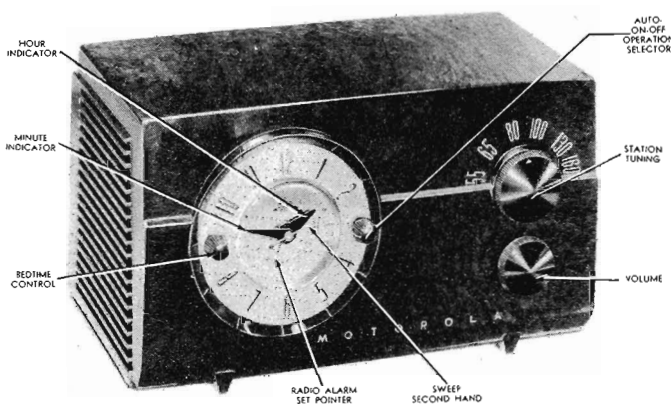
TYPE - AC table model superheterodyne receiver with plated circuit chassis and loop antenna. This receiver has a self-contained electric clock for automatically controlling the operation of the radio and the appliance outlet.

TUNING RANGE - 535 to 1620 Kc **IF** - 455 Kc

TUBE COMPLEMENT - 12BE6 conv; 12BA6 IF amp; 12AT6 Det, AVC, 1st AF amp; 50C5 pwr amp; 35W4 rect.

POWER SUPPLY - Operates from 117 volt, 60 cycle, alternating current only. Power consumption 35 watts.

APPLIANCE OUTLET - For use with 117 volt AC appliances rated only at 1100 watts or less.



CLOCK - Duplex self-starting electric clock. See Service Notes for clock repair information.

INSTALLATION & OPERATING INSTRUCTIONS

Your Motorola is ready to operate when you plug it into any 117 volt, 60 cycle AC power line. Do not attempt to operate on DC as the clock motor will be damaged.

The clock is self-starting and will operate when power is plugged into the power outlet. The sweep second hand will indicate when the clock is running. To set the hands on the clock to indicate the correct time, pull out **AUTO-TIME SET** knob (on rear of radio) and turn in a clockwise direction only. The self-starting feature, in the event of a temporary electric power interruption, will re-start the clock but it will be necessary to correct for time lost by means of the **AUTO-TIME SET** knob.

Radio reception can sometimes be improved by reversing the power plug in power outlet. Try it both ways and leave it in position giving best reception.

A built-in loop antenna eliminates the need for an outside antenna. The antenna is somewhat directional, therefore, when receiving weak stations, reception may sometimes be improved by rotating the receiver slightly in either direction.

MANUAL RADIO OPERATION

1. Turn **OPERATION SELECTOR** knob to ON. Allow a short period of time for tube warm-up.
2. Tune to desired station with the **STATION TUNING** knob.
3. Adjust volume control to desired level.
4. The radio will play until **OPERATION SELECTOR** is turned to OFF.

AUTOMATIC CLOCK-RADIO OPERATION

1. Turn **OPERATION SELECTOR** knob to ON. Allow a

short period of time for tube warm-up.

2. Set the radio dial to the station you would like to hear at any pre-determined time, up to twelve hours in advance. Adjust volume to desired loudness.
3. Push in **AUTO-TIME SET** knob (on rear of radio) and turn in a clockwise direction until **RADIO ALARM SET POINTER** indicates the radio is to be turned on automatically.
4. Turn **OPERATION SELECTOR** to OFF and then to AUTO position. Leave it in AUTO position.
5. The radio is now set to turn on automatically at time indicated by **RADIO ALARM SET POINTER**. It will continue to play until **OPERATION SELECTOR** is turned to OFF.

BEDTIME CONTROL

The bedtime control feature is a timing device for turning the radio and appliance off after any pre-set interval of time up to one hour. This feature allows you to listen to the radio while you are in bed, with the assurance that it will shut off automatically after you are asleep. Or, you may turn off a lamp or appliance, if desired.

If appliance is not desired during the time the bedtime control is in operation, disconnect appliance from receptacle.

TO SET BEDTIME CONTROL

Turn **BEDTIME CONTROL** knob clockwise. The farther the control is turned, the longer the radio will play, up to a maximum of 60 minutes.

BEDTIME CONTROL AND AUTOMATIC OPERATIONS COMBINED

By combining the bedtime control and automatic radio operation, it is possible to turn the radio off automatically and to turn it on again automatically. Thus, you may go to sleep at night with music and be awakened with music again the following morning.

TO USE THIS FEATURE, SET CONTROLS AS FOLLOWS:

1. Push in AUTO-TIME SET knob (on rear of radio) and turn in a clockwise direction until RADIO ALARM SET POINTER indicates time radio is to be turned on automatically.
2. Turn OPERATION SELECTOR to OFF and then to AUTO position. Leave it in AUTO position.
3. Turn BEDTIME CONTROL clockwise to any period of time from 0 to 60 minutes.
4. Tune in desired station and adjust volume.

APPLIANCE OPERATION

The APPLIANCE OUTLET is located on the rear of the set. Coffee-maker, heating pads, lamps, or any other electrical appliances which operate from 117 volt AC and do not consume more than 1100 watts may be plugged into the APPLIANCE OUTLET. They will turn on automatically with the radio.

To turn on the appliance automatically at some predetermined time, follow the AUTOMATIC CLOCK-RADIO OPERATION instructions. The radio will also come on with the appliance, serving as a reminder that the appliance has been turned on. If radio reception is not desired together with appliance operation, just turn VOLUME knob to minimum.

Appliances may also be operated manually, by following MANUAL RADIO OPERATION instructions. If radio reception is not desired with appliance operation, just turn VOLUME knob to minimum.

If radio is to be used alone, be sure to remove appliance plug from APPLIANCE OUTLET.

SERVICE NOTES

TO REMOVE RADIO CHASSIS FROM CABINET

1. Remove the four screws which hold the rear cover; disconnect the antenna and appliance outlet leads and remove the cover.
2. Pull off the two control knobs from the front of the cabinet.
3. Remove the Phillips head screw under the tuning knob on the front of the receiver.
4. Disconnect the chassis power leads from clock.
5. Disconnect speaker leads from chassis.
6. From the back, remove the three screws that mount the chassis to the cabinet.
7. Remove the chassis from the cabinet.

TO REMOVE CLOCK FROM CABINET

1. Remove the two speaker mounting screws and remove speaker.
2. Pull off the operation selector knobs on front of cabinet.
3. Remove the four screws that hold the clock bracket to the cabinet.
4. Carefully remove the clock and clock bracket from the cabinet.
5. Unsolder leads and remove the two small nuts and washers mounting the clock to the clock bracket.

CLOCK REPAIR INFORMATION

Duplex timers can be repaired at Duplex Clock Co., Inc. 29 Cherry Avenue, Waterbury, Connecticut.

The timer should be removed from the radio cabinet and packed carefully in order that no further damage results in shipment.

An acknowledgement with a quotation and a request for payment will be sent to the dealer before the repair is made. The timer will be returned to the dealer on receipt of payment. If the timer is within warranty, repairs will be made on a no-charge basis.

USE OF ISOLATION TRANSFORMER

The chassis of this receiver is connected directly to the power line, however, the power cord circuit is broken by an interlock when the cabinet rear cover is removed. When servicing or aligning this chassis from AC, an isolation transformer should be inserted between the power line and the chassis.

CIRCUIT DESCRIPTION

1. The circuit of this chassis is conventional - there are no built-in resistors or capacitors. Leads are plated on both sides of the chassis base, thereby replacing the usual connecting wires and making wiring more uniform.
2. The metal plating extends through all the holes on the chassis, connecting circuits on the front with those on the rear.
3. Reference to the schematic diagram and to chassis will permit the circuit to be traced easily.

SAFETY PRECAUTIONS

1. Do not service the chassis on a metal plate, because of the possibility of a short circuit.
2. Use caution when handling the chassis with power applied, because all high voltage leads are exposed.
3. The outer edges of the chassis and various plated areas are at ground potential.

COMPONENT REPLACEMENT

1. To prevent tube breakage, remove them before replacing components.
 2. WHEN REMOVING DEFECTIVE COMPONENTS USE ONLY A SMALL SOLDERING IRON (60 WATTS OR LESS) TO AVOID DAMAGE TO THE WIRING. DO NOT USE A SOLDERING GUN. WARNING: THE LEADS ARE VERY THIN, AND EXCESSIVE HEAT WILL BURN THEM OR LOOSEN THEM FROM THE BASE MATERIAL.
 3. Plated connections or leads, if damaged, may be replaced with a jumper of regular hookup wire.
 4. It is recommended that multiple lug components be removed by immersing all the lugs simultaneously into a controlled temperature soldering pot, Motorola Part Number 66T632703. The component may then be lifted off the chassis easily. If a soldering pot is not available, heat each lug individually with a small soldering iron and shake or brush off as much molten solder as possible. Then, by alternately heating and loosening each lug, the entire component will be freed.
 5. An individual tube clip may be removed by squeezing it with pliers and then unsoldering it. The new clip snaps into the hole.
 6. Resistors or capacitors may be removed by unsoldering one end at a time.
- CAUTION: Clean all the solder from the holes before installing a new component. Do not let the solder run onto an adjacent lead, as a short circuit will be created.

ALIGNMENT

Use an isolation transformer between the power line and the receiver. If not available, connect low side of generator to ground (outer chassis edges) through a .1 mf capacitor.

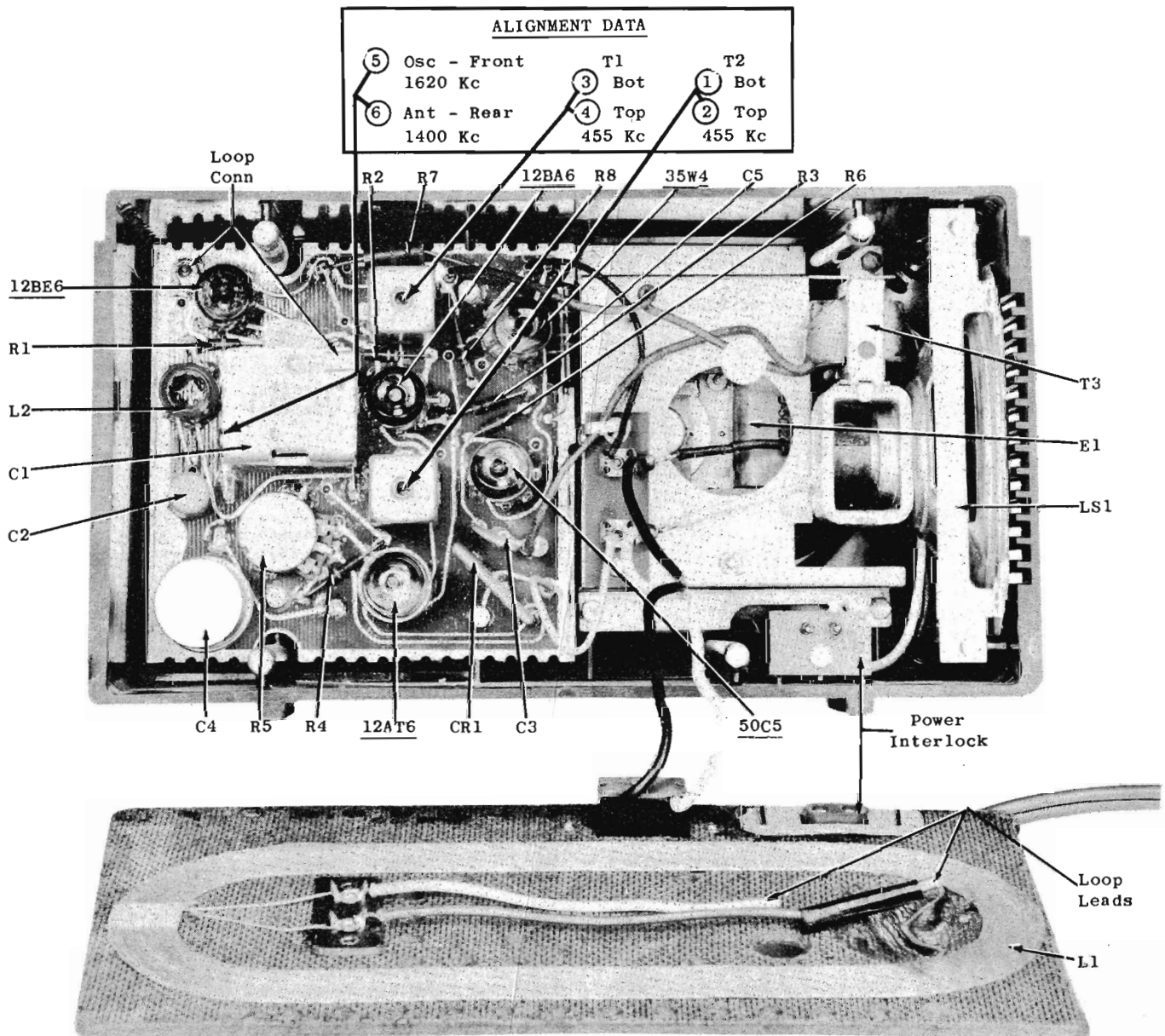
Connect a low range output meter across speaker voice

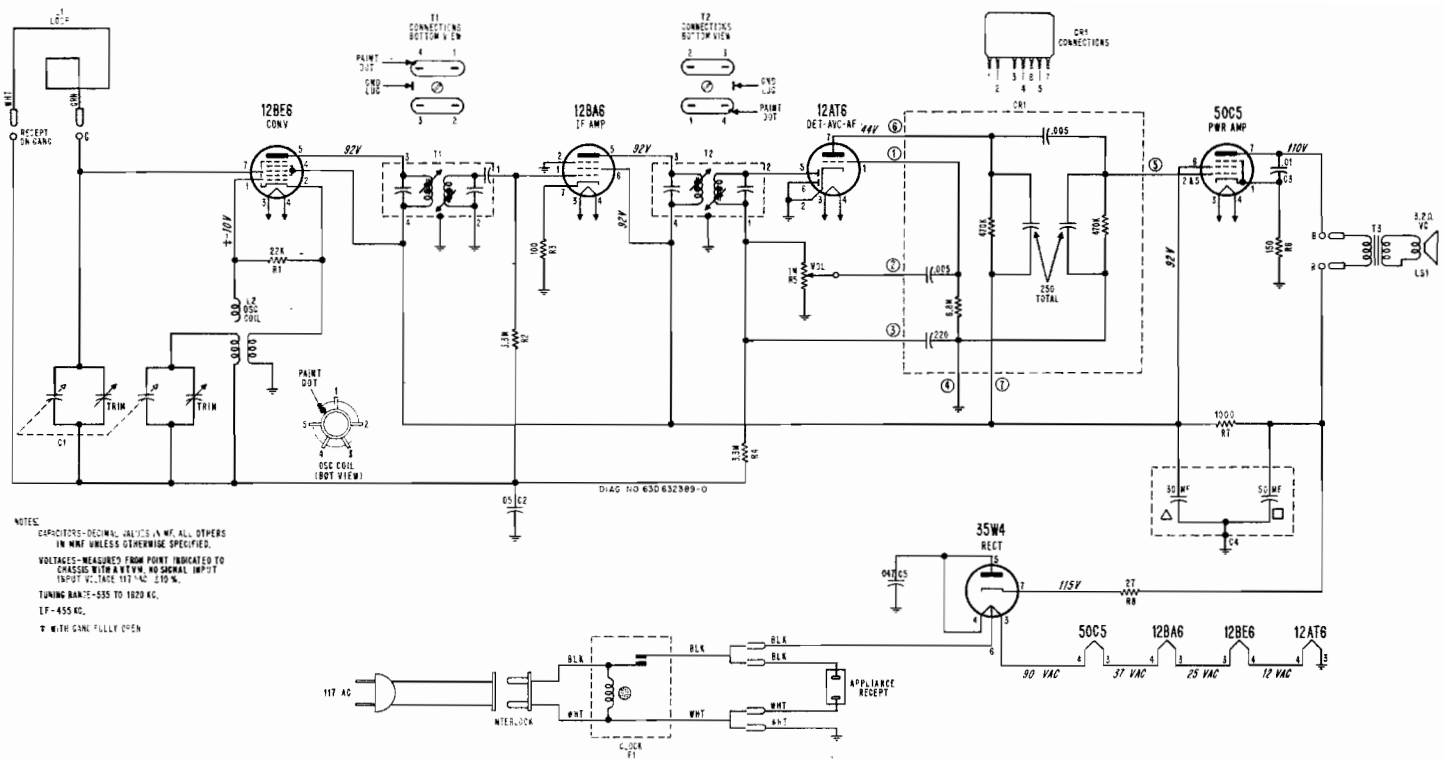
coil and set volume control to maximum.

Set signal generator output to produce .40 volts across voice coil. As stages are aligned, reduce generator output to maintain the .40 volt level to avoid overloading receiver.

STEP	DUMMY ANTENNA	GENERATOR CONNECTION	GENERATOR FREQUENCY (400 cycle mod)	GANG SETTING	ADJUST	REMARKS
IF ALIGNMENT						
1.	.1 mf	Grid of conv. (pin 7, 12BE6)	455 Kc	Fully open	1, 2, 3 & 4 (IF cores)	Adjust for maximum. Use insulated screwdriver.
RF ALIGNMENT						
2.	.1 mf	Grid of conv. (pin 7, 12BE6)	1620 Kc	Fully open	5 (Osc)	Adjust for maximum.
3.	-	Radiation loop*	1400 Kc	Tune for max	6 (Ant)	Adjust for maximum.

*Connect generator output across 5" diameter, 5 turn loop and couple inductively to receiver loop. Keep loops at least 12" apart.





REPLACEMENT PARTS LIST

NOTE: When ordering parts, specify model number of set in addition to part number and description of part.

Ref. No.	Part Number	Description	List Price	Part Number	Description	List Price
ELECTRICAL PARTS				MECHANICAL PARTS		
Capacitors				42B610632	Clip, tube pin.....per/c	.50
C-1	19K630263	Variable, 2-gang.....	2.85	29A630230	Lug, terminal: AC connector.....doz	.35
C-2	8A120842	Paper, tubular: .05 mf 200V	.40	28A631078	Plug, line cord (interlock).....	.10
C-3	21R120853	Ceramic Disc: .01 mf 450V..	.25	29A631120	Terminal, pin (on spkr & ant leads)	.20
C-4	23B630155	Electrolytic: 50-30 mf/150V	1.90		doz	
C-5	8K490232	Molded, paper: .047 mf 400V	.30			
CR-1 21B630180 Multiple Capacitor Resistor Plate.....				CABINET PARTS		
			.85	*16K632657	Cabinet, plastic: mahogany (55C1)	***
E-1 72D632676 Clock Assembly: Duplex				*16K632659	Cabinet, plastic: white (55C2)...	***
		NOTE: SEE SERVICE NOTES		*16K632660	Cabinet, plastic: mint green	***
		FOR CLOCK REPAIR INFORMATION	--	(55C3).....	***	
L-1 *1V632714 Antenna Loop & Back Cover				*16K632661	Cabinet, plastic: clover pink	***
		Assembly: incl AC recept &		(55C4).....	***	
		line cord.....	3.70**	30B630227	Cord, line: with plug & interlock	1.35
L-2 24B630327 Coil, oscillator.....				61A622114	Crystal, plastic.....	.15
			.85	*36K632662	Knob, operation selector: gray	.15
LS-1 50C630287				(55C1,3,4).....	.15	
or	50C631455	Speaker, PM: 4"; 3.2 ohm	4.70**	*36K632663	Knob, operation selector: white	.15
		VC; incl T-3.....	3.55	(55C2).....	.15	
Resistors - Note: All resistors are insulated carbon type unless otherwise specified				*36K632667	Knob, tuning: gray (55C1,3,4)...	.25
R-1	6K119405	22,000 20% 1/2W.....doz	1.20	*36K632668	Knob, tuning: white (55C2).....	.25
R-2	6K119407	3.3 meg 20% 1/2W.....doz	1.20	*36K632665	Knob, volume: gray (55C1,3,4)...	.15
R-3	6K119402	100 20% 1/2W.....doz	1.20	*36K632666	Knob, volume: white (55C2).....	.20
R-4	6K119407	3.3 meg 20% 1/2W.....doz	1.20	1V630275	Receptacle, appliance: with lugs.	.35
R-5	18A630279	Volume Control: 1 meg.....	.95	*34K632664	Scale, clock dial.....	.60
R-6	6K119403	150 20% 1/2W.....doz	1.20	3S115138	Screw, machine: 6-32 x 1-9/16	.20
R-7	6K121276	1000 20% 2W.....	.25		Phillips flat head (chassis mtg -	
R-8	6B119401	27 10% 1/2W.....doz	1.20		through front of cabinet).....doz	.20
T-1 *24K632782 Trans, 1st IF: 455 Kc.....				3S121050	Screw, thread-cutting: #6 x 1/2	.25
T-2 24K632039 Trans, 2nd IF: 455 Kc.....					plain hex head (chassis & spkr	
T-3 25B630280 Trans, output.....					mtg).....doz	.25
			1.00	3S115237	Screw, thread-cutting: #6 x 5/16	.40
					plain hex head (clock mtg)....doz	.05
				15A630871	Shell, appliance recept mtg.....	.05
				31A630229	Terminal Strip (AC connector on	.25
					clock mtg brkt).....	.25
				29A620057	Terminal, pin (on ant loop leads)	.25
					doz	.25

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

*New Item, Appears in any List for First Time

**Plus Federal Excise Tax at Current Rate

***Prices Furnished Upon Request